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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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NOTARO & MICHALOS P.C.
Suite 110
100 Dutch Hill Road
Orangeburg, NY 10962-2100

EXAMINER

LUND, JEFFRIE ROBERT

ART UNIT. PAPER NUMBER

1763

DATE MAILED: 01/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/759,611

Applicant(s)

KARNER ET AL.

Examiner

Jeffrie R. Lund

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 November 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1, 2, and 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto et al, US Patent 5,340,621 in view of Karner et al, US Patent 5,753,045.

Matsumoto et al teaches a vacuum processing apparatus that includes: two plasma discharge configurations that form two plasma beams 7 parallel to each other and in a low-voltage high-current plasma beam discharge gap between a cathode 2 and anode 6; a deposition configuration 11 (substrate) which extend a selected distance from the beam axis along a substantial section of the discharge beam longitudinal

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direction, a power supply 16 to independently drive each gap; a gas suction configuration; and a gas supply section 26, 27 for supplying a Silicone containing gas. Matsumoto et al also teaches a hot and cold cathode. (Entire document)

Matsumoto et al differs from the present invention in that Matsumoto does not teach gas flow is generally parallel to the discharge axis and that the deposition configuration is between the discharge axes and/or the discharge axes are disposed between two deposition configurations facing one another.

Karner et al teaches the a plasma processing apparatus that has a gas flow parallel to the discharge beam 1 axis A and the discharge axis is disposed between multiple deposition configurations mounted on boat 24 and facing each other. (Entire document, specifically, figures 1, 3, and 3a) Karner et al also teaches that the gas flow parallel with the discharge beam axis produces more uniform coatings on larger deposition configurations by placing the deposition configurations parallel to the beam axis at a specific spacing for a desired plasma density such that the parallel gas flow produces a constant product (column 1 line 62 through column 2 line 27).

The motivation for replacing the gas supply configuration of Matsumoto et al with the gas supply configuration of Karner et al is to provide a more effective means of supplying the reactant gas, which increases the dwell time of the gas in the plasma, and more uniformly coat the deposit configurations.

The motivation for replacing the deposition configuration of Matsumoto et al with the deposition configuration of Karner et al is to provide an alternate and equivalent means of supporting a substrate, and to more increase the throughput of the apparatus

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by coating multiple substrates at the same time.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the gas supply configuration and deposition configuration of Matsumoto et al with the gas supply configuration and deposition configuration of Karner et al.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto et al and Karner et al as applied to claims 1, 2, and 4-8 above, and further in view of David, US Patent 6,015,597.

Matsumoto et al and Karner et al differ from the present invention in that they do not teach that the deposition configuration is configured as a powder capture surface.

David teaches a deposition configuration configured as a powder capture surface
7. (Figure 1)

The motivation for replacing the deposition configuration of Matsumoto et al and Karner et al with the deposition configuration of David is to enable the apparatus of Matsumoto et al and Karner et al to produce powder products as taught by David.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the deposition configuration of Matsumoto et al and Karner et al with the deposition configuration of David.

Response to Arguments

5. Applicant's arguments filed October 13, 2005 have been fully considered but they are not persuasive.

In regard to the argument that Matsumoto et al teaches plasma sheets not

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beams, the Examiner agrees. However, the term "beam" is very broad term and applies equally to the sheet plasma of Matsumoto et al. No specific shape or size of the beam is claimed. The sheet plasma of Matsumoto et al is a wide beam.

In regard to the argument that Matsumoto et al teaches a gas flow perpendicular to the beam, the Examiner agrees. The modification of the gas flow is taught by Karner et al (US Patent 5,753,045). One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In regard to the interpretation of the prior art discussed by Karner et al '045, the Examiner disagrees. The applicant has only review part of the prior art discussed by Karner et al '045. Karner et al '045 discloses two prior art documents, specifically, German reference DE 40 29 270 which corresponds to US Patent 5,616,373 to Karner et al, and Swiss reference CH-PS 664 768 which corresponds to US Patent 4,749,587 to Bergmann et al. The applicants correctly described Karner et al '373 as having multiple plasma beams with a perpendicular gas flows. Bergmann et al teaches a single plasma beam with perpendicular gas flow. Karner et al '045 concludes that Bergmann et al and Karner et al '373 both fail to produce uniform coatings (column 1 lines 30-61). Thus one of ordinary skill in the art reading Karner et al '045 would conclude that the primary difference between Karner et al '045 and the prior art is not the number of plasma beams but how the gas is supplied to the processing chamber. Both prior art documents teach perpendicular flows, while Karner et al '045 teaches a parallel flow.

In regard to the argument

“Departing from Matsumoto with its sheet-shaped plasma and with gas flow perpendicular to the plasma discharge across the plasma-sheet and perpendicularly toward and onto the substrate, it is not obvious for the skilled artisan to replace the sheet-shaped plasma of Matsumoto by two or more single beam shaped plasma discharges as of Karner '045 and to replace Matsumoto's perpendicular gas flow with respect to the discharge and with respect to the substrate, by Karner's '045 axes-parallel gas flows and substrate parallel gas flow, when considering the overall teaching of Karner '045 namely, that a plurality of individual side-by-side plasma beams leads to problems with respect to spatially distributed uniformity of high plasma density.

Karner '045 refers to Karner '373 and thus to a technique that is disadvantageous and which is rather more similar to the present invention than is Matsumoto. The combination of Karner '045 and Matsumoto thus would actually be contrary to the teaching of both references, so that such a combination cannot be an obvious one.”

the Examiner disagrees. As discussed above, Matsumoto et al teaches a sheet plasma, and a sheet plasma is a plasma beam. Second, as discussed above, the “overall teaching” of Karner et al '045 is clearly directed to the direction of the gas flow and not the number of plasma beams. Thus, one of ordinary skill in the art would be motivated by the success of Karner et al '045 to replace perpendicular flow in an apparatus with one or more plasma beams, such as Matsumoto et al, with the parallel

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flow taught by Karner et al '045 to improve the uniformity of the deposited material as taught by Karner et al '045. Thus the combination would be obvious.

In regard to the argument that "Karner '045 thus actually teaches away from applying multiple beam plasma generation for reproducibly high quality large surface treatment", the Examiner disagrees. Karner et al '045 is silent in regard to applying multiple beam plasma generation for reproducibly high quality large surface. In fact, Karner et al '045 only teaches in column 1 lines 55-61:

"By way of an example, DE 40 29 270 [Karner et al '373] describes an arrangement of the workpieces with respect to a directed plasma beam in the area of approximately 50% of the maximal plasma density. It was found, however, that with this arrangement it is difficult to achieve the same layer quality over larger surfaces in a reproducible fashion."

Karner et al '045 does not disclose what in the apparatus of Karner et al '373 cause the difficulty to "achieve the same layer quality over larger surfaces in a reproducible fashion", but since Karner et al '045 identifies that the single plasma beam of Bergmann et al has similar problems (i.e. no pure metastable layers can be deposited in a large-surface manner (column 1 lines 41-43)), one of ordinary skill in the art must conclude that the problem is not in the number of plasma beams but in how the gas is supplied (i.e. both prior art references supply the gas perpendicular to the plasma beam(s)). Thus, since Karner et al '045 does not specifically comment on coating with a multiple plasma beam system, Karner et al '045 does not support the argument.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited art teaches the technological background of the

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invention.

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrie R. Lund whose telephone number is (571) 272-1437. The examiner can normally be reached on Monday-Thursday (6:30 am-6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jeffrie R. Lund
Primary Examiner
Art Unit 1763

JRL
12/29/05